

EFFECTIVENESS OF INTERNATIONAL ENVIRONMENTAL AGREEMENTS: A REVIEW  
OF INTERNATIONAL ENVIRONMENTAL GOVERNANCE THEORY

by

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Ronald Mitchell

All countries face numerous environmental problems, from air and ocean pollution to the existential threat posed by climate change and many more. In response, many nations have negotiated and joined international environmental agreements to alter the policies of governments, the behaviors of their citizens, and the quality of their national and the global environment. I summarize and assess theories related to two research questions. First, how do scholars define the effectiveness of international environmental agreements? Second, what are the metrics by which scholars can assess the structure and effectiveness of an international environmental agreement? I seek to answer these questions by conducting a review of international environmental governance literature from the past three decades using a counterfactual framework - comparing what occurred in the real world with a treaty in effect to what one would have expected to happen if that treaty didn't exist. Ultimately, I conclude that three key elements influence the effectiveness of international environmental agreements: the standards by which one measures effectiveness, the degree to which the language of an agreement utilizes legalization, flexibility, and specificity, and the tools environmental regimes use to encourage states to meet their commitments. In the face of increasingly urgent environmental challenges, the most promising path for improving effectiveness is the integration of these three essential factors into the treaty writing, ratification, and enforcement processes.

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# Introduction

From air pollution to overfishing to climate change, every country in the world faces potentially devastating environmental problems daily. In response, the international community has created a wide variety of international environmental agreements (IEAs)<sup>1</sup> that attempt to address environmental challenges, from the 1975 Convention on International Trade in Endangered Species of Wild Fauna and Flora treaty to the 2015 Paris Agreement on climate change. This paper asks: what makes international environmental agreements effective?

While there is much to study about IEAs, examining the success of an IEA stands out, a process known as IEA effectiveness. Effectiveness can be measured by comparing what happened with an IEA to what would have happened without that IEA - a counterfactual (Helm & Sprinz, 2000; Young, 2011; Vollenweider, 2013) - and seeing if the behavior of states was different or if the goals of an IEA were reached (Mitchell, 2009). Then, one can delve into the mechanisms of effectiveness, such as why states make the decisions that they do (March & Olsen, 1998; Hovi & Underdal, 2018), how the language of IEAs influences their success (Helfer, 2013; Kim, 2014) and the various mechanisms that regimes promote to ensure effectiveness (Chayes & Chayes, 1993; Downs, 2000; Young, 2018).

This paper reviews the literature on theories that relate to two research questions:

1. How do scholars define the effectiveness of international environmental agreements?
2. What are the metrics by which scholars can assess the structure and effectiveness of an international environmental agreement?

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<sup>1</sup> Throughout this paper, international environmental agreements and the international regimes, like the United Nations, that administer them are treated largely as interchangeable as Young (2011) does. This is done because, while there are certainly differences between regimes and agreements, they share a great deal of overlap in the theories surrounding the definitions of and mechanisms for their effectiveness.

Briefly, the key findings of this paper are twofold. First, how one approaches improving IEA effectiveness is deeply intertwined with and influenced by how effectiveness itself is defined. In the sections below, behavior change and goal achievement are viewed through a counterfactual framework, which means that the most effective IEAs are those that influence the actions of states and then subsequently reach the targeted goals of the agreement (Mitchell, 2009). Indeed, based on this definition, an IEA that fails to change the behavior of a state cannot be effective nor take responsibility for the achievement of IEA goals, because such attainment must have come from a source other than the IEA itself.

Second, in order to maximize the effectiveness of an IEA, each of the four main tools for enforcing IEAs - sanctions, incentives, norm-setting, and capacity-building - should be utilized together. Making use of all four mechanisms best addresses the two central binaries that explain state decision making - the logics of consequences and appropriateness (March & Olsen, 1998) and willingness versus ability (Hovi & Underdal, 2018) - and increase the likelihood of the successful deployment of a method or combination of methods that changes the behavior of a state and achieves the goals of an IEA.

## Definitions of Effectiveness

Following Mitchell (2009), Vollenweider (2013), and Young (2011), this paper defines effectiveness by asking: is the world different *with* a given IEA relative to how the world would have been *without* that IEA? The guiding framework for this paper is therefore counterfactuals: comparing what did happen with an IEA to what would have happened without an IEA (Young, 2011). This contrasts with alternative approaches for defining effectiveness, such as comparing what actually happened to what the IEA sought to have happen. Once the idea of the counterfactual is fully developed, the theory surrounding two key areas where it most comes into play - changing the behavior of states and achieving the goals of an IEA - will be examined.

### Counterfactuals

The literature surrounding counterfactuals is crucial to this paper's analysis. At their core, counterfactuals involve the juxtaposition of observed results to expected results (Young, 2011). From this, effectiveness can therefore be measured by comparing "the performance of regimes relative not only to the probable course of events in their absence (i.e., the noregime counterfactual) but also to some conception of an ideal outcome known as the collective optimum" (Young, 2011, p. 19854). Several scholars offer different ways that counterfactuals can be defined and measured, discussed below.

It is first important to define the pure counterfactual: actual behavior as viewed against counterfactual, or expected, behavior. In tackling this, Helm and Sprinz (2000) observe that assessments of effectiveness are crucial because it is closely related to how public policy is evaluated, which is therefore critical to the formation of IEAs since governments want to know if



it is worth their time to focus on international governance. However, it has been challenging for governments to appropriately value IEAs since it is hard to quantify the effectiveness of a given IEA. To address this, Helm and Sprinz seek to “develop a general measurement concept for assessing the degree to which international environmental regimes contribute to environmental problem solving” (Helm & Sprinz, 2000, p. 631). This counterfactual concept measures the effectiveness of the IEA by comparing what actually happened as a result of the regime to a specific counterfactual, namely “the hypothetical state of affairs that would have come about with a perfect regime” (Helm & Sprinz, 2000, p. 633), which can differ from the environmental goals an IEA targets. The methodology and results produced by Helm and Sprinz (2000) are viewed as the baseline counterfactual from which the subsequent authors build.

Helm and Sprinz (2000) also build on the pure counterfactual by combining it with what they call the collective optimum, or the best case scenario of an environmental goal that could be achieved by the IEA, to create their final counterfactual measurement index. This collective optimum creates a new perspective for viewing the effectiveness of a given IEA, as it allows one to contrast what happened and how much change it created as compared to nothing versus what the regime wanted to happen and how much change that would have been compared to nothing (Helm & Sprinz, 2000). In other words, Helm and Sprinz’s overall counterfactual concept creates room for comparisons to the observed world as well as the measurement of progress towards certain IEA goals, which allows for flexibility in measuring IEA effectiveness.

Building on Helm and Sprinz, Bernauer and Siegfried (2008) focus specifically on international policies that regulate cooperation between those both upstream and downstream of river basins. In this field, most case studies that examine the effectiveness of international

treaties do so qualitatively and in a binary manner, which tends to oversimplify the complex process of upstream-downstream environmental policymaking. To calculate the counterfactual component of this process, Bernauer and Siegfried propose the *policy performance metric*, or PER, a “time-dependent function of: (1) the outcome that should ideally be reached (optimum performance); (2) the outcome of a given policy at the time of measurement (actual performance); and (3) the outcome that would have occurred in the absence of this policy (counterfactual performance)” (Bernauer & Siegfried, 2008, p. 481). Most studies find that there are more cases of upstream-downstream problems but disagree about whether these inter-state interactions are positive or negative. Using their PER tool as explained above, Bernauer and Siegfried conclude that while these settings lead to more interaction, the relationship that forms can more often than not be categorized as negative, not positive.

Finally, Vollenweider (2013) outlines three different quantitative approaches for deriving a given IEA’s counterfactual, which differ because of the “inherent difficulty to justify what a state would have done if it did not join the institution...[a]s this behavior involves the unobserved quantity of a potential outcome in the absence of institutional membership” (p. 346). The first method is rooted in theory and involves calculating an expected result (reduced emissions, decreased pollution, etc.) and comparing it to the actual observed result to derive an effectiveness score. However, this method often misses the actual positive or negative effect of the IEA as well as potential complicating variables, such as unique cultural beliefs or shifts in national power structures. The second method models the counterfactual by using multiple regression models and incorporating all potential influencing variables to determine the causal effect of an IEA. Unfortunately, Vollenweider notes that this model cannot account for the fact

that IEAs are almost exclusively self-selecting and fails to address the same variables as the first method. Finally a third method is offered, which involves employing mathematical causal inference approaches including estimating the difference-in-differences between certain variables to attain the best components of the first two models. All three methods result in varied assessments of the effectiveness of an IEA based on different estimates of the appropriate counterfactual.

No matter how one chooses to measure or define it, understanding the concept of the counterfactual is essential to comprehending the definition of IEA effectiveness. It involves some measure of weighing what happened in the real world to what would have happened in a “perfect regime” (Helm & Sprinz, 2000) or with an “optimum performance” (Bernauer & Siegfried, 2008) qualitatively - or even quantitatively (Vollenweider, 2013). Crucially, it is essential to note that while counterfactuals compare actual behavior to what would have happened with no IEA, goal achievement compares actual behavior to the behavior desired by the parties of an environmental regime - known as the collective optimum - which could be either an environmental or more broadly behavioral goal. While they both fit into the standard of comparing what did happen to what might have happened, understanding the difference in criteria is critical. With that in mind, the next two sections explore how the concept of the counterfactual can be applied to both changing the behavior of states and to achieving the goals of a given IEA.

## Behavior Change

The first and largest component in defining effectiveness involves whether an IEA can influence the actions of a state so that it differs from the estimated counterfactual, or the behavior of the state without the IEA (Mitchell, 2009; see also Young, 2011). In discussing the same framework, Sand (2016) calls this *behavioral effectiveness*, asking “which are the measurable positive changes in the environmental policies and practices of States that are attributable to their participation in a treaty?” (Sand, 2016, p. 3). Whether one calls it behavior change or behavioral effectiveness, this is the lynchpin on which IEA effectiveness operates: at their core, environmental regimes cannot be considered successful unless they can convince states to act differently than they otherwise would have without the regime in place.

## **Measuring Behavior Change**

There are a variety of methods and structures through which one can measure the extent to which an IEA brought about a change in behavior. Mitchell (2009) offers two indicators for the influence of an IEA: *outputs*, which include the “laws, policies, and regulations that states adopt to transform an IEA from an international agreement to national law” (Mitchell, 2009, p. 148), and *outcomes*, or “changes in how governments or sub-state actors behave” (Mitchell, 2009, p. 148). While these two metrics can be somewhat incomplete in measuring true shifts in motivation, largely due to the potential presence of other complicating variables such as a new government coming into power or changes in the national or global economy (Mitchell, 2009), using outputs and outcomes as tools can reveal the influence of an environmental regime when one examines both the words and actions of a state - especially by using the counterfactual.

Young (2011) agrees, arguing that using the framework of behavior change, and specifically examining whether or not an IEA created new types of state behavior than existed previously or would have existed without the IEA, offers a clear pathway for measuring effectiveness.

Moreover, quantifying behavior is crucial to defining IEA effectiveness because measuring if behavior has been changed by an IEA lies at the cornerstone for determining success (Mitchell, 2009; see also Young, 2011). The simplest way to understand the necessity of behavior is to examine an IEA aimed at reducing atmospheric sulfur dioxide concentrations, the goal, by decreasing reliance on coal power plants, the targeted behavior (Vollenweider, 2013). In one scenario, sulfur dioxide concentrations in states decrease, but the prevalence of coal power plants stays the same, meaning that the IEA could not have been the driving force in achieving the goal. Similarly, a second situation results in sulfur dioxide concentrations decreasing, but rather than states shifting away from coal power plants, they instead turned to new technologies that reduce the amount of sulfur emissions per ton of coal burned. Here, the goal of the IEA was again achieved, but with the creation of a new and different environmental policy, rather than through the targeted behavior. Either way, behavior was not changed as a result of the IEA coming into force, illustrating the fact that behavior is a necessary condition and an important piece of evidence in determining whether or not an IEA was effective (see Hovi & Underdal, 2018; Ringquist & Kostadinova, 2005).

There is also a small subset of theory centered around how IEAs can not only shape international politics and decision-making behavior on a larger scale, but how their structure and goals can also trickle down to the domestic level. Ringquist and Kostadinova (2005) argue that IEAs provide a driving force for national environmental policy by creating guidelines for what

change is needed and how to achieve such a change. Downs (2000) agrees, arguing that national leaders are more likely to change their behavior when they buy into the legitimacy of an environmental regime in a process is known as *legitimation*, which is largely influenced by the level of regime democracy, the age of the regime, the quality of states who support it, and whether or not the regime possesses high standards of consensus. While this is notable because the idea that IEAs can influence both national and domestic behavior offers multiple levels of analysis on the influence of a given regime, it is also important to recognize that many changes coded as ‘international’ are in fact domestic changes, from passing environmental laws to changing national policy goals (Downs, 2000; Ringquist & Kostadinova, 2005). Separating the different scales of behavior change driven by an IEA, however, is an area of research that this paper does not discuss in an effort to remain focused on effectiveness.

### **Drawbacks of Using Behavior Change**

While behavior change remains the clearest and most visible indicator of the success - or failure - of an IEA, there are certainly some flaws in using behavior as the primary indication of effectiveness. Mitchell (2009) notes that analyzing state actions involves overcoming issues with endogeneity that arise “when the causes of a policy also influence the policies adopted to resolve it” (Mitchell, 2009, p. 153). This is generally the case because of a selection bias that forms as states are more likely to accept rewards than sanctions - and more likely to join IEAs that they were planning to comply with than those they were not (see also Vollenweider, 2013).

Fundamentally, then, it can simply be hard to determine if an observed behavior change was truly driven by the influence of an environmental regime. In seeking to address this problem, Mitchell (2009) offers the following table for examining the complex relationship between behavior change and effectiveness:

<u>The relationship of compliance and effectiveness</u>	<b>Effectiveness</b> (behavior influenced by IEA)	<b>Non-effectiveness</b> (behavior NOT influenced by IEA)
<b>Compliance</b> (behavior meets agreement standards)	<i>Treaty-induced compliance</i>	<i>Coincidental compliance</i>
<b>Non-compliance</b> (behavior does NOT meet agreement standards)	<i>Good faith non-compliance</i>	<i>Intentional non-compliance</i>

As the table above illustrates, one type of behavior change is known as coincidental compliance, where, although behavior meets the standards outlined in the IEA, the regime cannot solely take the credit. This can happen because states purposely negotiate a low bar of entry - as in the case of the 1985 Convention on Long Range Transboundary Air Pollution, whose starting point for sulfur emissions reductions had already been met by most parties before the agreement was even signed (Mitchell, 2009). On the whole, Mitchell (2009) uses the above table to focus on the differences across columns - defining effectiveness through the counterfactual - rather than the difference between rows - which is an argument about compliance, a concept this paper dispenses with through the Compliance section below.

Nonetheless, using the counterfactual to compare what the behavior of a state was after an IEA came into force - whether through the actions they are taking or policies they are putting into law - as opposed to what it would have been without the presence of any environmental regime is the clearest way to define whether or not an IEA was effective.

## Goal Achievement

The other major component that shapes effectiveness includes what goals an IEA seeks to achieve as well as how it focuses on addressing an environmental problem itself and the political and economic behaviors that have contributed to its creation (Helm & Sprinz, 2000; Houghton & Naughton, 2014). This is the major standard by which many regimes evaluate themselves, as the goals of an IEA - reduce carbon emissions, cut down on overfishing, stop deforestation - are the most visible components of any environmental regime. Ultimately, goal achievement is not only a measure by which scholars can define the effectiveness of an environmental regime, but also how parties to the regime itself measure effectiveness - although note that while goal achievement here uses the counterfactual, states within a regime might simply ask whether or not a goal was achieved instead of using the theoretical framework offered by the counterfactual.

It is also crucial to point out that goal achievement is inherently reliant on behavior change when considering the effectiveness of an IEA. In other words, if the goal of an IEA is to reduce carbon emissions, and the behavior change needed is to reduce a state's usage of oil, the goal cannot be achieved without first changing the behavior of a state. Indeed, behavior could be changed and a goal left unachieved - a state could stop using oil but turn to natural gas, continuing to emit carbon - but if a goal is achieved without behavior being changed, then the IEA cannot have been the primary force behind such an achievement. Therefore, while this paper examines both behavior change and goal achievement as separate facets in defining IEA effectiveness, they are fundamentally intertwined. No matter how one examines the issue, goal achievement is functionally dependent on changing the behavior of states when it comes to evaluating the effectiveness of an IEA.



## Measuring Goal Achievement

In discussing how a goal is approached when it seeks to address an environmental challenge - Sand (2016) poses a question regarding what he dubs the *ecological effectiveness* of an IEA: “how successfully have the environmental problems targeted by a treaty been solved or mitigated as a result of cooperative action by the contracting States?” (Sand, 2016, p. 3).

Mitchell (2009) builds on Sand’s idea of ecological effectiveness by pointing out that many IEAs are evaluated on one facet of their effectiveness: *impacts* - or the various observable “changes in environmental quality” (Mitchell, 2009, p. 149), which allows for direct observation on the effectiveness of a given IEA. However, while these often appear to be the most easily measured and consistently accurate factors - if a state emitted two million tons of sulfur dioxide one year and one million the next, one might assume that the impact of the IEA was positive - just because change was made and a goal was achieved does not automatically mean the IEA was the main force behind the achievement. As noted throughout this paper, there are a variety of alternative explanations, such as a change in national leadership or an economic recession, that could have brought about the observed shift in impacts - and it is essential to keep this in mind.

With the framework of impacts and the challenges of measuring goal achievement in mind, Helm and Sprinz (2000) worked to develop a tool that attempted to address these concerns while still allowing one to measure whether a goal was achieved, as described in the Counterfactuals section above. A key factor of Helm and Sprinz’s measurement tool is that it focuses on both the environmental impacts of IEAs as well as the other environmental and socioeconomic effects of such agreements, as the former can be harder to directly observe and

carry a significant lag time while the latter have been previously explored and quantified by other scholars. Thus, Helm and Sprinz's concept manages to address some of the flaws in measuring goal achievement - as detailed below - by providing a method for measuring success in achieving both an environmental goal and the social and political variables that surround it.

### **Drawbacks of Analyzing Goal Achievement**

Although goal achievement is certainly a major indicator of IEA influence, it is not without flaw as a component of defining effectiveness. Notably, several authors have pointed out that focusing too narrowly on environmental goals can be overly restrictive, as many of the variables one would measure to determine if progress has been made on an IEA are so slow-moving that measurement and comparison become challenging (Houghton & Naughton, 2014; Ringquist & Kostadinova, 2005). In particular, Ringquist and Kostadinova (2005) argue that commonly used environmental variables, such as air pollution or carbon emissions, can be hard to untangle from other social or economic drivers. Houghton and Naughton (2014) add to this, noting that IEA studies that focus exclusively on short-term changes in the environmental variable - 'was pollution reduced the year after the agreement was signed?' - seemed unable to find an IEA effect in either direction, again given the slow pace with which these changes and the economy move. Therefore, when studies point to an IEA as 'ineffective', it is important to recognize the inherent difficulty in evaluating IEAs until after a sufficient amount of time has passed such that one might expect their influence to be evident.

Additionally, Mitchell (2009) argues that the IEAs that end up being ratified are inherently more watered down than they need to be to actually address the environmental

problems. This often happens because of *vertical disintegration*, as governments depend on support from domestic actors to secure international agreements, which complicate commitments as each layer of a nation's government has differing demands for the contents given agreement (Hovi & Underdal, 2018). Ultimately, the trickle-down nature of such policymaking can eventually strip the IEA of any truly bold or necessary goals, making the achievement of such goals a less impressive and less impactful result.

### **Separating Goals from Impacts**

A critical connection to unravel is the relationship between goal achievement and observing environmental impacts. In most IEAs, the goal the regime is trying to achieve is an environmental impact - e.g. to maintain a safe population of whales to avoid driving them into extinction - and therefore, the two topics are often conflated with one another (Mitchell, 2009). However, goal achievement does not have to center on impacts, as it could instead focus on the underlying structures of behavior rather than the impacts themselves (Young, 2011). Put another way, an IEA seeking to address climate change could target behavior, such as burning fossil fuels, that increases emissions, or simply call for a decrease in the atmospheric concentration of carbon. That same IEA could also seek to reduce carbon emissions by increasing investments in energy efficiency and clean energy programs. A goal is simply a target to be reached, and whether it is done through singling out behavior or an environmental impact is entirely distinct.

Furthermore, the process of vertical disintegration, as described in the section above (Hovi & Underdal, 2018; Mitchell, 2009), can sometimes strip regime goals of the environmental impacts that they should be targeting or reduce the degree to which the IEA can address such

impacts. This can highlight the level to which goal achievement and environmental impacts overlap with one another - although they are separate features, they can both be affected similarly throughout the creation, ratification, and enforcement of an IEA.

While goal achievement and environmental impacts are often conflated with one another, understanding that not every goal contained within an IEA has to be centered on an environmental impact is critical. Making this difference clear is crucial to comprehending the theory outlined in this section as well as grasping how goal achievement and its relationship to behavior change and effectiveness more broadly are discussed throughout this paper.

## Compliance

Compliance involves determining whether a state is following the rules of an IEA and, if they are failing to comply with their commitments, examining the reasons for such failure. This also includes a growing area of theory that involves contrasting the compliance rates of public environmental regimes with private ones (Grabs, 2018). However, unlike both behavior change and goal achievement - which wield a counterfactual framework of comparing what happened with an IEA as opposed to what would have happened without the IEA - compliance compares observed behavior or the achievement of goals to the law as opposed to the counterfactual (Young, 2011; see also Grabs, 2018). While this can be an incredibly valuable way to define effectiveness, it does not fit into the context of this literature review, which centers on the usage of counterfactuals as a guiding principle. Therefore, this paper will not explore the theory surrounding compliance - or the subsets of compliance, like performance - because this is a version of change largely devoid of counterfactuals and therefore not relevant here.

## Mechanisms for Effectiveness

With the various definitions of effectiveness laid out, one can dive into the mechanisms by which effectiveness can be achieved. This section has three parts, offering a background of why states behave the way they do, discussing different rule structures for IEAs, and summarizing the tools regimes encourage the use of to enforce agreements.

### Understanding Decision Making

Before one can delve into handling the rules of and responses to IEAs, it is crucial to understand why states do or do not comply with a given environmental regime. While there are a variety of frameworks for comprehending the background of states' decision making, this review engages in the two most prominent views: March and Olsen's (1998) logics of consequences versus appropriateness and Hovi and Underdal's (2018) framing of willingness versus ability. Using these two dichotomies helps set the scene for enforcing effective IEAs.

### **Logics of Action**

The primary perspective in this review for understanding decision making are the logics of action, as proposed by March and Olsen (1998) and elaborated upon by Mitchell (2009). In this framework, states make decisions either through a *logic of consequences*, where actors operate along clear, explicit cost-benefit calculations, or a *logic of appropriateness*, which posits that states take values into account and therefore the influence of IEAs “stems from their ability to establish, strengthen, and codify norms of ‘right’ and ‘wrong’ behavior” (Mitchell, 2009, p. 155). Crucially, while the two logics are certainly distinct and separate pathways for

understanding state behavior, they are not mutually exclusive, and any given action usually involves elements of each logic. Indeed, most states are “constituted both by their interests, by which they evaluate their expected consequences, and by the rules embedded in their identities and political institutions. They calculate consequences and follow rules, and the relationship between the two is often subtle” (March & Olsen, 1998, p. 952). Therefore, while each logic is evaluated and often used as an analytical tool separately, it is important to recognize how they are inherently interconnected.

The logic of consequences sees international politics as “arising from negotiation among rational actors pursuing personal preferences or interests in circumstances in which there may be gains to coordinated action” (March & Olsen, 1998, p. 949), distilling decisions made by states down to the core logical factors that might be an influence. Consequently, a successful IEA operating within this logic may cause states to “forego independent decision making in favor of interdependent decision making” (Mitchell, 2009, p. 159), choosing to weigh environmental problem solving as a tool to achieve more traditional methods of international success, such as strengthening the economy or improving one’s reputational standing in international circles.

Conversely, the logic of appropriateness sees actions as norm-based and assumes that actors will “follow rules that associate particular identities to particular situations, approaching individual opportunities for action by assessing similarities between current identities and choice dilemmas and more general concepts of self and situations” (March & Olsen, 1998, p. 951). Within this logic, then, states would ostensibly follow the norms set by an international regime even if it would not automatically pass a cost-benefit analysis, like in the case of the 1960 Nuclear Test Ban Treaty, which set the norm that openly testing nuclear weapons was

unacceptable and was remarkably effective in reducing such behavior (Mitchell, 2009). This can then trickle down to the sub-state level, as corporations and NGOs “often do not ask ‘is complying with these laws in our interests’ but instead simply ask ‘what is the law?’” (Mitchell, 2009, p. 162), which often means IEAs are more effective on the sub-state level as opposed to on the international level.

### Potential and Desire for Change

The second framework that further helps to understand the behavior of states is finding a way to comprehend a given states’ drive for change - and if they have the capacity to even change in the first place. Most scholars agree that IEAs tend to be comprised of three broad components: “describing and diagnosing problems, developing and adopting policy ‘cures’, and implementing these cures” (Hovi & Underdal, 2018, p. 1). However, while most studies of effectiveness tend to focus on the final component, the IEA itself, this perspective focuses on the influence IEAs exert on the first two steps, describing problems and adopting policy.

The first facet of implementation is a party’s *willingness to deliver* on an IEA, or if they actually plan on following through with the commitments outlined in a given agreement. One can generally sort states into three categories of willingness (Hovi & Underdal, 2018, pp. 3-4):

1. *False positives* sign agreements despite having no intention of following through on them to cash in on reputational benefits or avoid sanctions.
2. *Reluctant positives* sign agreements and intend to follow through on them, but back out due to changes in outside factors, fear of other countries not following through on their commitments, or anything that increases compliance costs and/or reduces benefits.

3. *False negatives* are governments who do not join IEAs and nevertheless behave largely as prescribed in these agreements, e.g. the United States shifting to natural gas and reducing reliance on coal despite not joining any IEA.

The second facet within implementation is *ability*, or the fact that a government trying to honor its commitments in good faith may have trouble creating and following through on changes. As summarized in the Behavior Change section above, Mitchell (2009) notes that this arises when an IEA that was effective in changing the behavior of a state still results in non-compliant behavior. On an international level, while one can zoom in and evaluate the effectiveness of an IEA on a single nation or group of nations' ability to make change, the global nature of some environmental problems means that 90% of states can comply perfectly with an IEA but 10%, all high-impact states, can fail to do so and undo the overall progress (Hovi & Underdal, 2018). Domestically, since governments depend on support from a variety of domestic actors - from high-reputation NGOs to profitable and influential multinational corporations - to secure international agreements, a policy can get watered down through vertical disintegration, described in the Goal Achievement section above (Hovi & Underdal, 2018). Beyond navigating complex and bureaucratic systems, ability also includes the actual capacity a state has in complying with IEA commitments. Some states simply lack the infrastructure, stability, and resources needed to address environmental problems without help, entailing capacity-building efforts (Hovi & Underdal, 2018) - covered more in the Managing Responses section below.



## Setting the Rules

The main component of IEAs that influences their effectiveness involves the rules and guidelines that are foundational to their structure. Those who study this facet of IEAs generally discuss three key terms: *legalization*, the codification of norms and expectations into the official wording of an agreement (Kim, 2014; see also Sand, 2016); *flexibility*, the mutability of an IEA based on the parties (Helfer, 2013); and *specificity*, how clearly the IEA defines goals and benchmarks for progress (Klinsky, 2016). All three factors are discussed in more detail below.

### **Legalization**

*Legalization* mechanisms include the facets of IEAs concerned with strict regulation, e.g. making ‘unspoken’ regime rules official to avoid such conflicts with states meeting their commitments. Legalization is the difference between states signing a declaration on ocean pollution that mentions overfishing in passing or an agreement that singles out overfishing as directly related to the rate at which an ocean is polluted. Sand (2016) points out how important this distinction can be, as having an IEA with a low level of legalization can make it easier for a state to claim they are meeting their commitment than a more highly legalized IEA - and indeed, increasing legalization can affect how states view commitments (Chayes & Chayes, 2013). However, in looking at a wide variety of IEAs handling environmental problems ranging from air pollution to the dumping of toxins in the ocean, while “[m]ore legally regulated IEAs are likely to be more conducive to economic growth” (Kim, 2014, p. 309), these types of IEAs consistently fail to reduce environmental degradation as much as a less legalized regime might reduce it (Kim, 2014), indicating the importance of flexibility, discussed next.

## Flexibility

*Flexibility* describes the rigidity of an IEA and is helpful in determining how a regime responds to unexpected changes, from new demands by states to changes in the global economy (Helfer, 2013). Flexibility mechanisms touch on the components of IEAs that adjust based on the economies, commitments, and unique variables of individual parties (Kim, 2014) and are crucial to understanding the negotiations that go into treaty ratification (Mitchell, 2009). These take many forms and are divided into formal and informal mechanisms as well as the phase of a treaty during which they appear, as shown in the table below (Helfer, 2013, p. 179):

TABLE 7. 1. *Flexibility mechanisms*

Treaty action or process	Formal flexibility mechanisms	Informal flexibility mechanisms
Entry into Force	<p><b>Unilateral:</b></p> <ul style="list-style-type: none"> <li>• Reservations</li> <li>• Declarations</li> <li>• Interpretive statements</li> <li>• Territorial application</li> </ul> <p><b>Collective:</b></p> <ul style="list-style-type: none"> <li>• Provisional application</li> <li>• Breaking into multiple treaties or parts</li> <li>• Phasing in treaty obligations</li> <li>• Ratifications requirements</li> <li>• Minimum number of states</li> <li>• Membership by specific states</li> </ul>	<p><b>Unilateral:</b></p> <ul style="list-style-type: none"> <li>• Statements of future intent</li> </ul> <p><b>Collective:</b></p> <ul style="list-style-type: none"> <li>• Modus vivendi</li> <li>• Practices based on unperfected legal acts (e.g., unratified treaties)</li> </ul>
Treaty in Force	<p><b>Unilateral:</b></p> <ul style="list-style-type: none"> <li>• Subsequent notifications</li> <li>• Escape</li> <li>• Escalator clauses</li> <li>• Self-judging exclusions</li> </ul> <p><b>Collective:</b></p> <ul style="list-style-type: none"> <li>• Exceptions and limitations</li> <li>• Special and differential treatment (e.g., for developing countries)</li> <li>• Delegation to international courts or international organizations</li> <li>• Amendment and revision</li> </ul>	<p><b>Unilateral:</b></p> <ul style="list-style-type: none"> <li>• Autointerpretation</li> <li>• Withholding funds for treaty activities</li> <li>• Noncompliance</li> </ul> <p><b>Collective:</b></p> <ul style="list-style-type: none"> <li>• Interpretation through conduct</li> <li>• De facto delegation</li> <li>• Informal processes and practices (e.g., regarding consultations, appointments to treaty offices)</li> <li>• Unwritten supplementary accords</li> </ul>
Cessation of Treaty Obligations	<p><b>Unilateral:</b></p> <ul style="list-style-type: none"> <li>• Denunciation and withdrawal</li> </ul> <p><b>Collective:</b></p> <ul style="list-style-type: none"> <li>• Limited duration</li> <li>• Formal suspension</li> <li>• Termination</li> </ul>	<p><b>Unilateral:</b></p> <ul style="list-style-type: none"> <li>• Nonparticipation in treaty activities</li> </ul> <p><b>Collective:</b></p> <ul style="list-style-type: none"> <li>• De facto suspension (e.g., during armed conflict)</li> <li>• Desuetude (e.g., treaty in force but moribund in practice)</li> </ul>

Recognizing that there are too many flexibility mechanisms to succinctly cover, Helfer (2013) focuses on two specific types: exit clauses, which outline the pathways for a state to leave an agreement, and escape clauses, which offer methods for a regime party to suspend their commitments without completely withdrawing. Overall, he concludes that such mechanisms are not “superfluous, boilerplate, or symbolic provisions that appear in the final clauses of treaties out of habit or happenstance” but instead are a key component in how “states make tradeoffs among potentially available flexibility tools in an attempt to calculate an overall level of treaty risk” (Helfer, 2013, p. 190). In short, even in IEAs that appear on the surface to be inflexible agreements, flexibility still exists as a major tool that states and regimes consider as they set the rules of a given IEA.

Moreover, while many scholars have debated the specific benefits of an IEA with increased flexibility, Kim’s research finds that “the results of flexibility elements reflect a positive effect both in the environmental and economic models” (Kim, 2014, p. 312). In other words, IEAs appear to be more effective when they adopt a less rigid regulatory structure by incorporating some or all of the flexibility mechanisms outlined above by Helfer (2013). Ultimately, Mitchell (2009) notes that, while some environmental activists view increased flexibility as the intentional creation of loopholes that allow states to shirk their commitments, without such mechanisms, states who are considered central to the success of a regime might not even join it in the first place.

## Specificity

Finally, *specificity* deals with the exactness of an agreement, or how precisely it seeks to measure success or failure of the variables included within the IEA. This can vary widely, as a vague IEA with low specificity seeking to protect wetlands might call for sustainable and sensible development, whereas a highly specific IEA would instead demand that no more than 15% of every 100 acres of wetland may be developed. Klinsky (2016) points to the importance of specificity in incorporating aspects of social justice into IEAs such as the 2015 Paris Agreement, noting that how such agreements phrase both the climate-specific interpretations of social justice as well as the specific mechanisms by which environmental regimes can incorporate aspects of justice is critical to evaluating whether they have been successful in achieving such goals (Klinsky, 2016).

Furthermore, much like with legalization, increasing the specificity of an IEA can increase a state's understanding of the nuances of their commitment, although this does not automatically translate to a change in behavior or the achievement of an IEA goal (Chayes & Chayes, 2013; Hovi & Underdal, 2018). Nonetheless, since this paper deals almost exclusively with highly specific agreements - which are both the most common amongst IEAs as well as the most easily examined, given the clear targets they include - specificity as a concept is not discussed in more detail in this review.

## Managing Responses

Once the rules of an IEA have been discussed and the agreement has been signed and ratified, states may begin to make efforts towards fulfilling their commitments. There is a wide variety of theory surrounding the tactics IEAs use to successfully approach and handle the reactions of states and encourage behavior that achieves its goals. This paper engages with four of the primary strategies regimes used by environmental regimes: sanctions, incentives, the setting of norms, and capacity-building.

These four tools all center on a major divide within the theory on response management involving two main schools of thought: the enforcement school and the managerial school. The enforcement, or realist, school includes those who argue for stricter forms of enforcing IEAs that tend to involve negative reinforcement, including trade sanctions and exclusion from international groups (Chayes & Chayes, 1993; Mitchell, 2009). In contrast, the managerial, or normative, school argues that these forms of enforcement are “inappropriate given the absence of any exploitative intent...[and] too costly, too political, and too coercive” (Downs et al., 1996, p. 381) and instead pushes for softer and less rigid enforcement built on persuasion and norm-setting (Mitchell, 2009). With these frameworks in mind, one can then delve into the four major strategies most commonly wielded by regimes to ensure effectiveness.

## Sanctions

The first tool, employed to enforce agreements in many international governance structures, is sanctions, or any type of enforcement technique that relies on punishing the bad behavior of states in order to encourage good behavior. This is most often accomplished through measures resembling trade restrictions, where countries are forced to comply with their IEA commitments or face escalating fines and restrictions on trade (Hovi & Underdal, 2018) in ways that seek to alter the consequences of a state's actions (Mitchell, 2009). Sanctions are part of the toolbox known as *punitive strategies*, where regimes wield the 'stick' part of the 'carrot-and-stick' method to punish bad behavior (Mitchell, 2009). Sanctions and other punitive strategies are most effective when "victim states are harmed sufficiently in ways that give them strong incentives to respond" (Mitchell, 2009, p. 169), as states that fail to see the downsides of non-compliance have no motivation to change their behavior or work to achieve goals.

Fundamentally, the usage of sanctions almost always involves embracing the view of the enforcement school that non-compliant behavior is deviant and represents "violations that have to be punished" (Downs et al., 1996, p. 381) rather than an expected behavior (Chayes & Chayes, 1993). Regimes hope that escalating punishments will cause states to "forego independent decision making in favor of interdependent decision making" (Mitchell, 2009, p. 159), weighing environmental problem solving as a tool to achieve international success. In other words, sanctions strongly encourage states to take environmental problems and the steps needed to confront them seriously with the idea that doing so will eventually drive changes in the behavior of non-compliant states. This stance firmly entrenches sanctions not only within a problem-solving matrix deeply informed by the logic of consequences but one that is directly

aimed at changing the willingness of states to take action by forcing both false and reluctant positives to reconsider, as outlined in the Understanding Decision Making section above.

As a result, the usage of sanctions means that regimes are establishing strict and uniform levels of compliance for all member states while recommending negative reinforcement strategies for states that aren't carrying out their commitments (Chayes & Chayes, 1993; Downs et al., 1996). This requires consistent and clear rules and a highly legalized agreement, as discussed in the Setting the Rules section above, to overcome the fact that international politics generally discourages cooperation between nations because of high opportunity costs (Ringquist & Kostadinova, 2005) and to provide a foundation of behavior on which to base sanctions.

#### Critiquing Sanctions

In examining sanctions, Chayes and Chayes (1993) point out that, by focusing largely on interests and taking a rigid view of non-compliant behavior, the usage of strict enforcement tools like sanctions effectively disregards the power of norm-setting through regimes. Moreover, such a stance ignores both the considerable effort states undertake to negotiate and devise treaties before joining them as well as the overarching recognition that “states, like other subjects of legal rules, operate under a sense of obligation to conform their conduct to governing norms” (Chayes & Chayes, 1993, p. 187). Young (2011) agrees, arguing that such enforcement is too narrowly focused and instead urging regimes and researchers alike to focus on mechanisms that change behavior and achieve IEA goals “without resorting to negative forms of enforcement” (Young, 2011, p. 19857) - a path which the following three tools largely follow.

## Incentives

The next technique utilized by regimes is the opposite of sanctions and serves as the ‘carrot’ in the ‘carrot-and-stick’ paradigm: incentives, which reward the good behavior of states. Mitchell (2009) dubs these *remunerative strategies*, the promising of rewards to states in exchange for following through on their commitments to an IEA or environmental regime. There are also *perception altering strategies*, which seek to alter the way parties to an IEA view the regime and their behavior altogether (Mitchell, 2009). Notably, this includes *cognitive strategies*, those that seek to educate states on why they should change their behavior by pointing out that failing to follow through on a commitment will result in states missing out on rewards - and assuming that, since states do not want that to happen, they will modify their behavior (Mitchell, 2009). Like sanctions, incentive strategies are the most effective when the effect - which is positive here as opposed to negative with sanctions - outweighs the cost of taking action, likewise embracing an approach couched firmly in the logic of consequences.

There are a variety of different ways that environmental regimes can incentivize good behavior. One way this can be done by *linking positive behavior to club goods* (Hovi & Underdal, 2018), where high-income countries pushing for change connect positive steps towards environmental action from lower-income countries to resources such as scientific knowledge or access to free trade. This is becoming increasingly difficult to do because of the many ways such resources diffuse today, which are more often than not outside direct governmental control (Hovi & Underdal, 2018). Another option is to implement a *deposit-refund system*, where countries pay into a regime-managed fund (deposit) while working towards their IEA commitments, receiving their payments back if they reach them (refund) but losing their



investment if they fail (Hovi & Underdal, 2018). While this can be hard to do because countries headed towards non-compliance would have no incentive to begin depositing in the first place, if applied correctly, it would encourage higher levels of behavior change relative to abatement costs (Hovi & Underdal, 2018). Using these and other tools appropriately can encourage states to continue their good behavior in exchange for a variety of positive rewards from a regime.

Incentive strategies can also be about improving the systems and regimes that enforce IEAs themselves. Chayes and Chayes (1993) argue that IEAs should also be enforced by preemptively addressing flaws in environmental regimes that might be preventing or discouraging states from following through on their commitments. Specifically, this includes three steps: improving regime dispute resolution, providing technical and financial assistance, and increasing transparency of regime mechanisms (Chayes & Chayes, 1993). Arguably, enforcing IEAs through “these interacting measures of assistance and persuasion is less costly and intrusive and is certainly less dramatic than coercive sanctions, the easy and usual policy elixir for noncompliance” (Chayes & Chayes, 1993, p. 205) while also working within other international systems of governance, which encourages interaction and interplay between different international regimes (Young, 2011).

### Critiquing Incentives

The central critique of incentives comes from Downs (2000) and his work highlighting the main criticism of incentives from political economists: *free-riding*, where states take advantage of IEA benefits without making a significant effort to alter their actions. In offering incentives for states to change their behavior and achieve the goals of an IEA, political economists zero in on the role of relative price, believing that states will make decisions along

the cost-benefit analysis spectrum while taking every opportunity to free-ride on IEAs that have a lower level of specificity or legalization and often have high levels of flexibility (Downs, 2000), as discussed in the Understanding Decision Making section above. While this can be addressed with more rigid structures for disbursing incentives as well as stricter punishments when free-riding behavior is noticed (Hovi & Underdal, 2018), free-riding behavior remains a key problem with incentives as a tool for promoting effectiveness.

## Norms

The third tool that serves as a mechanism for creating IEA effectiveness is norm-setting, or the creation of unofficial standards for behavior that more subtly influence states to change their behavior. Young (2018) calls this framework *constitutive effectiveness*, noting that “the purpose of some regimes is to establish public order within an issue domain or a spatially defined area rather than to articulate specific behavioural requirements and prohibitions” (Young, 2018, p. 463). In other words, even if countries aren’t specifically compliant to a given regime, their behavior will be modified by the very existence of the regime within the sphere of international governance. Norm-setting can also be done through *goal-setting effectiveness*, the recognition that the simple act of setting a goal for the international community to strive towards can drive changes on a state-by-state basis, and *generative effectiveness*, which provides resources and scientific or procedural knowledge that help states frame environmental issues (Young, 2018).

Regardless of the way a regime goes about establishing norms within international systems, they are always working to shift the values behind decisions as opposed to directly affecting a states’ cost-benefit analysis through sanctions or incentives. Therefore, norm-setting falls firmly into the logic of appropriateness, as it seeks not to change the actual costs of taking

action or the rewards from such action but to reshape why states would choose to follow through on their commitments. Indeed, the goal at the heart of norm-setting is to influence the behavior and goal-setting of states by shifting them from viewing environmental problems purely through a logic of consequences to approaching them through a logic of appropriateness.

The setting of norms can take many different forms within environmental regime structures. In *issue-specific reciprocity*, countries currently in compliance with an IEA would switch to less aggressive goals to expose the failures of non-compliant countries, establishing a norm of what happens to states who fail to keep up with their commitments - public, international embarrassment (Hovi & Underdal, 2018). Along these lines, Mitchell (2009) offers *normative strategies*, which go deeper by challenging states to shift what they value in decision making to match that of the regime itself. These strategies can be particularly effective because “[s]tates that are convinced that certain behaviors harm their own interests – regardless of what other states do – will avoid those behaviors without additional sanctions or rewards being needed” (Mitchell, 2009, p. 172). In other words, extremely effective norm-setting could render the first two tools employed by regimes - sanctions and incentives - moot by getting states to fundamentally change how they approach decision making in the first place.

### Critiquing Norms

A crucial observation about norm-setting (see Vollenweider, 2013) is that it inherently assumes that states actually care whether or not their behavior is in violation of international norms. Using norm-setting as a tool for effectiveness can also be challenging if an environmental regime is unable to align the norms they would like to produce with the social and cultural values of regime parties (Vollenweider, 2013; see also Young, 2011). Hovi and Underdal (2018) note

that these flaws with the setting of norms often arise in what they call *deep IEAs*, or those that necessitate major behavior changes or large-scale goals - e.g. reducing carbon emissions to address climate change - as opposed to *shallow IEAs* - e.g. increasing the number of electric vehicle charging stations - which only require small-scale shifts. Put another way, the greater the change required, the less effective unilateral usage of norms will be in achieving effectiveness.

Furthermore, Downs et al. (1996) argue that states only join treaties that they believe they can comply with while ignoring the treaties that with which they wouldn't want or be able to comply and even disregarding IEAs with which they believe others will not be able to comply. Simply put, just as orchestras will usually avoid music that they cannot play well, states will rarely spend a great deal of time and effort negotiating agreements that they know they - or other states - will violate (Downs et al., 1996). Therefore, in certain situations norm-setting can be wholly ineffective as some states will simply have no interest in joining an IEA - although if used in conjunction with other tools for effectiveness, notably sanctions, such norms could eventually force states to change their underlying values and embrace a regime.

## **Capacity-Building**

The fourth and final tool most often encouraged by environmental regimes is the building up of capacity for states that simply aren't in a place - economically or politically - to take any kind of meaningful environmental action. Capacity-building seeks to address the lack of ability Hovi and Underdal (2018) identify in the Understanding Decision Making section above for states in the unenviable situation of being unable to make progress on their environmental commitments, despite a genuine desire to do so.

Indeed, some regimes “are instrumental in identifying emerging issues and framing them in terms of needs for governance” (Young, 2018, pp. 463-464), and capacity-building often follows the setting of norms as discussed in the previous section. Regimes can employ a variety of *opportunity altering strategies* that attempt to change the behavior of states before they can even begin to approach an IEA, the most common of which are *generative strategies*, which provide resources, expertise, and information to encourage and reduce the cost of IEA-compliant behavior (Mitchell, 2009). Such an approach can also include *preclusive strategies*, which prevent states that might not even be a party to an IEA yet from behaving counter to the goals of an IEA - or at least make unwanted behavior considerably more costly (Mitchell, 2009). While preclusive strategies embrace a more negative enforcement framework, they too seek to help states build capacity in the right places by discouraging investment in undesired behaviors.

In arguing for the usage of this tool, Sand (2016) uses the example of CITES, the 1992 Convention on International Trade in Endangered Species of Wild Fauna and Flora. From the start, CITES utilized non-coercive strategies - building capacity through sharing access to resources and by providing expert advice - before using default enforcement penalties like trade sanctions. By embracing this process and not immediately leaping to negative enforcement, this version of capacity-building changed the behavior of 80 percent, or 20 out of 25, of the states originally in non-compliance with CITES (Sand, 2016).

Something crucial to note is that capacity-building, unlike the other three major techniques for enforcing agreements discussed in this review, does not automatically rely on highly legalized or specific IEAs - or even any one environmental regime. Even in the absence of an agreement altogether, an international regime can provide critical knowledge, build up

infrastructure, and deploy experts within a state to better prepare it to take environmental action. This is a major point to acknowledge and embrace because it means that capacity-building can always be occurring even as IEAs are negotiated and the specific steps towards addressing a problem like climate change or reducing toxic pollution are debated. A lack of dependency on rules frees capacity-building from many of the bureaucratic tendencies of international governance systems, creating a path for progress in the face of international gridlock.

### Critiquing Capacity-Building

Since capacity-building can and often does occur outside the presence of a specific IEA, as mentioned above, criticism of this tool looks different than the previous tools. The major area of critique comes from political economists, who argue that regimes have better ways to spend their money to maximize success than in countries far enough behind that they are unable to even begin changing their behavior (Rezai, 2011; see also Downs et al., 1996). However, it is crucial to note that this economic-centric critique of the opportunity cost of investing in climate policy disregards the fact that not investing in state capacity is not merely a neutral but a negative outcome, as climate change will eventually bring considerable harm to the global economy (Rezai, 2011). Even with that in mind, Grabs (2018) is one of many scholars who advocates that private, rather than public, governance systems offer the best ways to build capacity without comprising the resources of major environmental regimes.

## Conclusion

In seeking to address the wide range of environmental problems countries face, the international community often turns to environmental agreements. This paper reviews the theory surrounding one component of IEAs, effectiveness, through two research questions:

1. How do scholars define the effectiveness of international environmental agreements?
2. What are the metrics by which scholars can assess the structure and effectiveness of an international environmental agreement?

The findings of this review, as well as two key takeaways, several critiques of IEAs, and a few areas for further research, are summarized below.

Four central topics emerge from this paper's analysis. First, the frameworks in this paper grounded it in the same principles often employed by regimes in crafting IEAs. Using counterfactuals in defining effectiveness provided a focus on direct comparison between what did happen with an IEA to what might have happened without one (Young, 2011; Helm & Sprinz, 2000). Seeking to understand decisions through the logics of consequences and appropriateness (March & Olsen, 1998; Mitchell, 2009) and the willingness versus ability (Hovi & Underdal, 2018) dichotomies created space to directly connect mechanisms for effectiveness with state actions. Combined, these structures provided the space to delve deeply and precisely into the theory on IEA effectiveness.

Second, this review identified the similarities and differences between behavior change and goal achievement as foundations for defining effectiveness. Behavior lies at the cornerstone of effectiveness, as an IEA that failed to shift the behavior of states was inherently not effective in achieving its goals. Moreover, since goal achievement is intrinsically linked to behavior

change, an IEA that reached its goal without influencing the behavior of member states similarly cannot take credit for the result. Thus, effectiveness is deeply tied to and ultimately inseparable from behavior change.

Third, different levels of legalization, flexibility, and specificity can drastically alter the effectiveness of an IEA. Higher levels of legalization are commonly observed among IEAs and can decrease their economic impacts while having generally positive impacts on environmental components (Kim, 2014). Additionally, flexibility mechanisms, such as opt-out clauses, tend to be present in all IEAs, with the most successful IEAs featuring them prominently (Mitchell, 2009; Helfer, 2013). And IEAs that are high in specificity, such as those that specifically outline issues of climate justice (Klinsky, 2016), are more effective than low specificity IEAs.

Finally, the four main response management tools have strengths and weaknesses, with each offering important ways to solve different problems. Sanctions, incentives, and norm-setting all deal with states that have the ability to act but not the willingness (Hovi & Underdal, 2018), with sanctions representing an escalation in enforcement by a regime (Chayes & Chayes, 1996) as compared to rewarding positive behavior or setting a standard for behavior. Sanctions and incentives are also couched within a logic of consequences, while norm-setting lies more firmly within a logic of appropriateness (March & Olsen, 1998). On the other hand, capacity-building addresses states that lack the ability to act due to a dearth of resources - and unlike the other three tools, this can occur outside the specific parameters of a highly legalized IEA or an environmental regime altogether. Each tool has a different scenario for which its use increases IEA effectiveness.



## Central Takeaways

This review offers two main takeaways: the definition of effectiveness also influences how one addresses improving an IEA and every piece of the mechanism toolbox should be wielded in concert to maximize effectiveness. First, how effectiveness is defined is crucial to understanding how to approach improving it - in particular, whether one uses counterfactuals or another option, such as compliance, as a guiding principle. While both paths can use behavior change and goal achievement, compliance as a framework focuses on comparing observed activity to the actions a state committed to in an IEA, whereas counterfactuals allow for the juxtaposition of factors. Second, as touched on in the previous section, there are many tools that can increase IEA effectiveness, but the most effective path forward appears to be using a combination of them. In other words, environmental regimes should wield sanctions, incentives, norm-setting, and capacity-building, adjusting the usage of each depending on the states being targeted and the goals of a given IEA, in order to most effectively enforce an agreement.

## Critiquing IEAs

While the foregoing has argued for evaluating IEAs against the goals identified by the states creating them, one can also evaluate agreements against the more political goals of advocates. This includes but is certainly not limited to: the reduction of inequality, decreasing disenfranchisement, uplifting climate justice, and prioritizing indigenous perspectives. Castro (2017) argues that there are problems with structures that often reinforce a colonial perspective of global problem-solving, with high-income countries holding back resources and threatening sanctions on low- and middle-income countries if they do not cooperate.

Furthermore, some scholars challenge the very idea that environmental problems on the scale of climate change can be addressed through current political systems, such as IEAs and environmental regimes, arguing that instead what is needed is an overhaul of the entire structure (Mullenite, 2017; see also Castro, 2017) or a bottom-up reconsolidation of power within existing structures (Klinsky, 2017). Although this review provides sufficient examples of a pathway for effectiveness to somewhat refute such an argument, there are voices in the United States and elsewhere that continue to promote such methods for achieving success.

This review, and the critiques of scholars such as Mullenite (2017) and Castro (2017), also highlights one crucial area for further research within the field of IEA effectiveness: climate justice, or the centering of issues of inequity in environmental struggles. One framework for this research is transitional justice, “theory and practice aimed at enabling purposeful transitions from periods of deep injustices into more peaceful regimes” (Klinsky, 2017, “Introduction”, para. 2). Future discussions of effectiveness should explore ways to incorporate issues of climate justice into both definitions of effectiveness as well as methods for enforcing IEAs.

## Closing

As climate change continues to worsen, and the margins for error in addressing it further narrow, the effectiveness of international environmental agreements and the regimes that administer them will only become more important. This review offers significant conclusions about definitions of effectiveness and the methods by which it can be increased. Ultimately, the environmental problems of the 21st century can only be confronted by thoroughly studying past IEAs and crafting new ones that wield the best available tools to maximize effectiveness.

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